

# Environmental Checklist

## State Environmental Policy Act (SEPA)

### WAC 197-11-960

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### Background

1. *Name of proposed project:*

Brown 7-24 Well

2. *Name of Applicant:*

EnCana Oil & Gas (USA) Inc.

3. *Address and phone number of applicant and contact person:*

#### Applicant

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4. *Date checklist prepared:*

July 14, 2006

5. *Agency requesting checklist:*

Washington State Department of Natural Resources (WDNR)

6. *Proposed timing or schedule:*

EnCana Oil & Gas (USA) Inc. (EnCana) proposes to drill one exploratory well, referred to as the Brown 7-24 Well (Project), beginning in September 2006, provided the permits are approved. The drilling program will take place in three phases as described in the response to question 11 in this checklist. The well will take approximately 230 days to drill and complete (Phases I and II).

Phase III, production testing, will be conducted in selected zones to evaluate commercial feasibility. The production testing is expected to take approximately 55 days to complete. The working days for each phase may or may not be continuous. Total elapsed time for the three phases may take up to 1 year depending on drilling progress and drill rig availability.

Table 1 is an estimated project schedule for Phase I, II, and III milestones.

**TABLE 1**  
Estimated Project Schedule

Task/Milestone	Start	Finish
Pre-survey Data Gathering and Environmental/Cultural Surveys	6/01/06	7/10/06
Obtain permits	7/17/06	8/31/06
Phase I	9/01/06	1/15/07
Phase II	1/15/07	5/1/07
Phase III	5/1/07	7/1/07

Note: Timeframes shown for the phases assume no delays resulting from drilling progress or drill rig availability. As noted above, the total elapsed time for the three phases may take up to 1 year.

7. *Do you have any plans for future additions, expansion, or further activity related to this proposal?*

The proposed Project consists of an exploration well to determine the presence or absence of natural gas. If gas is discovered, the gas will be tested for potential commercial use and production. At this stage, the proposal consists solely of testing for the feasibility of potential production. Production is hypothetical and speculative until completion of exploratory drilling and testing. Once the results of the production testing are evaluated, a determination will be made on whether more drilling or testing is warranted. Further SEPA review may be warranted, depending on the outcome of this exploratory and testing work.

8. *List any environmental information that has/will be prepared related to this proposal:*

A preliminary plant, wildlife, and cultural reconnaissance survey was conducted in May 2006.

The following supplemental environmental studies were conducted on June 28, 2006, in preparation for the Project:

- Avian/wildlife surveys

- Rare plant survey
  - Wetland survey
  - Cultural and historical resources survey, including contacting the Washington Department of Archaeology and Historic Preservation
9. *Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal?*

No other applications affecting the Project area are known to exist.

10. *Government approvals or permits needed:*

The following government approvals or permits are in the process of being submitted to the appropriate agencies:

- Oil and gas permit from WDNR
- Conditional Use Permit from Grant County
- Approval Notice Application for a temporary air pollution source from Washington State Department of Ecology (WDOE)
- Application to Construct Approach onto County Road for Grant County
- Application for a Building Permit to cover grading activities for Grant County

11. *Give brief, complete description of your proposal, including the proposed uses and the size of the project and site.*

EnCana is proposing to drill an approximately 14,000-foot-deep exploratory well in Grant County, Washington, to evaluate the site for the presence or absence of natural gas and potential natural gas production. The Project is called the Brown 7-24 Well. The well site (Figure 1) is located approximately 3 miles northeast of Beverly, Washington, on land zoned as rural remote in the SW ¼ of the NE ¼ of Section 24 T16N R23E. Figure 2 is a map of Project facilities.

The drill site is located 3 miles east and 3.5 miles south of existing, asphalt-surfaced, two-lane highways (Highway 243 and 26, respectively). It is located about 3.5 miles east of the intersection of Highway 243 and Beverly Burke (cutoff) Road and is immediately south of Beverly Burke Road. The highways and Beverly Burke Road will provide direct access to the well site. The drill site will be approximately 400 feet by 800 feet in size (dimensions may vary based on topography and site conditions) and will consist of an approximately 400-foot by 400-foot well site and a 400-foot by 400-foot area for storage. The well site will contain the exploration well, temporary crew quarters, temporary preparation structures, drill rig and ancillary equipment (for example, drill rig engines, compressors, light plants), mud pit, fuel storage, water storage, and afterburners. The drill site will be fenced to restrict access, both for safety reasons and to prohibit livestock and other animals from entering the area.

The Project is expected to occur in three phases totaling a maximum of 363 days. The working days for each phase may or may not be continuous. Total elapsed time for the three phases may take up to 1 year depending on drilling progress and drill rig availability.

Activities will be conducted up to 24 hours per day and 7 days per week. The well will be drilled to approximately 14,000 feet below ground surface (bgs) with 40-inch-diameter conductor casing set at 60 feet (cemented to the surface to isolate and protect overburdened soil and shallow groundwater), 20-inch-diameter casing set at 1,500 feet (in bedrock and cemented to the surface), 9-5/8-inch-diameter casing set at 9,000 feet (through the basalt and cemented back to 5,000 feet), and 4 1/2-inch-diameter production casing set at 14,000 feet and cemented back to 7,000 feet.

Phase I consists of drilling through the basalt formation (approximately 9,000 feet). This phase will take approximately 130 working days, which may or may not be continuous. Phase I will be accomplished by an LM700 RC drill rig powered by three Cummins diesel engines. The mast height is approximately 150 feet with a substructure approximately 20 feet tall for a total height of about 170 feet.

Phase II consists of drilling the sedimentary formation below the basalt to a final depth of approximately 14,000 feet bgs. The second phase will take approximately 100 working days, which may or may not be continuous. Phase II will be accomplished by a conventional rotary drill rig (DHS 7). The second rig has a mast height that is approximately 140 feet tall with a substructure about 20 feet tall for a total of 160 feet.

The third and final phase is to conduct production testing in selected zones to evaluate commercial feasibility. This phase is expected to take approximately 55 working days, which may or may not be continuous. There may also be standby generator testing and completion after Phase III that may last an additional 35 days. The production casing, if run, will be perforated at select intervals based on electric log response. Each interval will be hydraulically fractured and tested separately.

Following completion of production testing, the well will be plugged and the site restored (unless further production testing is warranted), or the well may be shut in (temporarily capped) pending ongoing feasibility analysis, assessment of market conditions, and procurement of a gas contract for sales. If the well is plugged, it will be cemented in accordance with state regulations.

Erosion and sediment control will be installed before any site improvements occur. During construction of the drill site, sediment control will be accomplished by use of best management practices (BMPs) such as silt fences, stone check dams, and gravel. The principal method for managing erosion and sediment during drilling is by preventing the formation of concentrated surface runoff. After the well has been installed and testing completed, the ground surface will be protected from erosion by replacing the topsoil and revegetating the area. Drill cuttings, fluids, and other waste generated during the well installation will be managed onsite in steel tanks or lined pits, or disposed offsite.

Access to the Project area will be via Highways 243 and/or 26, as well as a local road (Beverly Burke Road). An existing dirt road will need to be improved in some locations to allow use by vehicles and equipment. Improvements will generally involve widening selected portions of the dirt road and surfacing with gravel. The road will be maintained throughout the Project's life to limit erosion.

## 12. Location of the project

The Brown 7-24 Well area lies approximately 3 miles northeast of Beverly, Washington, in Grant County, Township 16 North, Range 23 East, Section 24, in the southwest ¼ of the northeast ¼ of the Section.

# Environmental Elements

## Earth

### a. General description of the site:

The Brown 7-24 Well is located north of the Saddle Mountains, northeast of Beverly, Washington, in Grant County (see Figure 1). This land is relatively flat with no drainages, streams, canals or springs. There is a man-made irrigation pond located about ¼ mile to the west.

The geology of Grant County is quite varied. Elevations in the Project area range from 960 to 1,000 feet. The mountainous areas in the western portion consist of many different types of rock, including basalt and andesite. Representative soil that formed with material derived from basalt and in residuum and colluvium in these areas is in the Schawana series. The principal basalt is Yakima Basalt, which is the younger flow of Columbia River Basalt. This basalt originated from large fissures or rifts along which the fluid lava swelled to the surface and spread in all directions. Soil in the Schawana series formed in eolian deposits and in material derived from basalt (USDA, 1984).

The climate of the area is one of the driest in the region, with hot dry summers and cool, moderately damp winters. Lowlands receive an average of 18 centimeters (cm) (7 inches) annually while the upland areas receive up to 46 cm (18 inches) annually (DeBoer et al., 2002). Post-glacial climate, determined from pollen records, indicates that from 13,000 to 9,000 years before present (B.P.), climatic conditions were cooler and moister than today. The climatic pattern began to change after 9000 B.P. to warmer and drier conditions that reached an apex in about 4400 B.P. From about 4400 B.P. until approximately 2500 B.P., the climate was again cool and wet. Climatic conditions from 2500 B.P. to present appear to be somewhat warmer and drier than the previous phase and generally reflect current conditions (Morgan et al., 2001).

Vegetation in the general vicinity area is characterized as a shrub-steppe and grassland-steppe dominated by big sagebrush and bluebunch wheatgrass (*Artemisia tridentata*/*Agropyron spicatum*) that covers most of the arid interior of eastern Washington (Sackschewsky and Downs, 2001). Plant types are determined by soil types and depths, moisture, and slope exposure.

The Project area site is currently cultivated with mint and wheat crops. The surrounding land is cultivated and grazing land.

The average annual precipitation is about 7 inches, the average annual air temperature is about 51 degrees F, and the average frost-free season is 165 days.

- b. *What is the steepest slope on the site and the approximate percentage of the slope?*

The Project and surrounding area is relatively flat.

- c. *What general types of soils are found on the site (e.g., clay, sand, gravel, peat, muck)? Please specify the classification of agricultural soils and note any prime farmland.*

The Project site has one main soil type, the Schawana series. The soil is not classified as hydric. Schawana loamy fine sand is present as shallow, somewhat excessively drained soil on benches and is formed as eolian deposits.

Typically, the surface layer is brown, loamy fine sand about 3 inches thick. Below this to a depth of 12 inches is brown loamy fine sand. In some areas, the depth to basalt ranges from 8 to 20 inches. Included in this unit are 15 percent of areas with soil that have basalt at a depth of less than 8 inches, 10 percent Quinton loamy fine sand and Quincy fine sand on small dunes and in depression areas, and 5 percent of outcropping rock on the outskirts of benches.

- d. *Are there surface indications or history of unstable soils in the immediate vicinity? If so, please describe.*

Available geographic information system (GIS) and U.S. Geological Survey (USGS) topographic maps do not indicate any unusual features, unstable soil, or landslides in the immediate Project area.

- e. *Describe the purpose, type, and approximate quantities of any filling or proposed grading. Also, indicate the source of fill.*

Preparation of the drill site and storage area (approximately 400 by 800 feet) will require removal of vegetation and of topsoil up to 3 feet deep. Approximately 6,000 to 40,000 cubic yards (depending on depth of removal) of topsoil will be removed and stockpiled for use during site restoration.

Within the drill site, an area approximately 100 feet long by 50 feet wide by 10 feet deep (about 1,900 cubic yards of soil) will be excavated to construct the reserve pit and contain the drilling fluids. The excavated soil will be mounded around the perimeter of the reserve pit to provide additional containment. The area will be backfilled (with excavated soil) and restored after the drilling and testing is complete.

A second area within the drill site with dimensions of approximately 40 feet long by 20 feet wide by 10 feet deep (about 300 cubic yards) will be excavated to construct the emergency flare pit. The excavated soil will be mounded around the perimeter of the emergency flare pit to provide additional containment. The area will be backfilled (with excavated soil) and restored after the drilling and testing is complete.

A third area within the storage area and drill site with dimensions about 200 feet by 200 feet and 10 feet deep will be excavated to construct a storage pond for drill water. The pond will be lined. The excavated soil will be mounded around the perimeter of the storage pond to provide additional containment. The area will be backfilled (with excavated soil) and restored after the drilling and testing is complete.

Imported fill will consist of gravel used to surface portions of the widened existing access road. The gravel will consist of crushed rock for an "all-weather" surface to provide firm and uniform support for the drilling and testing equipment and to provide an erosion resistant surface for the working area. The source of the imported gravel (fill material) will be from a permitted quarry operation in the vicinity. The general layout of the drill site is shown in Figures 3 and 4.

f. *Could erosion occur as a result of clearing, construction, or use? If so, please describe.*

Yes, bare soil in the vicinity of the drill site may be susceptible to erosion by wind or water if not mitigated as described below. The existing access road, which will be widened and graveled, will be maintained throughout the Project's life to limit erosion.

g. *What percentage of the site will be covered with impervious surfaces after the project construction (e.g., asphalt or buildings)?*

No asphalt or other artificial impervious surfaces are planned during the drilling or testing operations. It is possible that a small facility will be constructed in the area of the well after drilling and testing is complete.

h. *Proposed measures to reduce or control erosion, or other impacts to the earth include:*

Appropriate erosion and sediment control measures will be installed at the well site before work begins in general accordance with local requirements. The well site will be periodically monitored to evaluate the effectiveness of installed Temporary Erosion and Sediment Control (TESC) measures.

The principal means of effective erosion and sediment control is prevention of concentrated surface runoff and protection of the ground surface by reestablishing vegetation. Erosion control practices and methods appropriate for the well site may include the following:

- Onsite containment of surface water originating or flowing within the work areas and access areas
- Dispersion of surface water runoff toward the edges of the drill pad
- Topsoil preservation in areas adjacent to the drill pad
- Covering bare soil stockpiles to prevent wind erosion
- Restoring the site as previously described

## Air

a. *What types of emissions to the air would result from this proposal (e.g., dust, automobile, odors, and industrial wood smoke) during construction and after completion? Please describe and give approximate quantities.*

Dust may be generated during the preparation of the drill pad. Equipment/vehicle exhaust will be generated on a short-term basis during the drilling and testing operations. Typically, several diesel engines will be operating during the drilling, completion, and testing of the well. An enclosed combustion system will be used as an alternative to conventional natural gas flaring. With the exception of the emergency flare pit described above, this system will eliminate the need for a flare pit. The enclosed combustion system will have a combustion efficiency of 99.99 percent, with nitrogen oxide (NO<sub>x</sub>) < 15 parts per million (ppm), carbon

monoxide (CO) < 10 ppm, and hydrocarbon (C<sub>x</sub>H<sub>y</sub>) < 10 ppm. These emissions are lower than conventional flaring.

Any natural gas that may be encountered during drilling, completion, or testing operations will be properly vented, incinerated, or safely flared. Emissions quantities are shown in Table 2. [[Pending update from air quality modeling and emission calculations]]

**TABLE 2**

Emissions Quantities for Equipment Used During Each Phase of Construction

Emission Point	Emission Rate (lbs/hr)	Total Emissions (tons)
<i>Phase 1</i>		
VOCs	64	4.19
Carbon Monoxide	434	28.18
Nitrogen Oxides as NO <sub>2</sub>	1,721	111.85
Particulate Matter	48	3.11
Sulfur Dioxide	28	1.81
<i>Phase 2</i>		
VOCs	337	16.86
Carbon Monoxide	797	39.83
Nitrogen Oxides as NO <sub>2</sub>	2,974	148.72
Particulate Matter	28	1.39
Sulfur Dioxide	56	2.78
<i>Phase 3</i>		
VOCs	72	1.81
Carbon Monoxide	206	5.28
Nitrogen Oxides as NO <sub>2</sub>	856	22.60
Particulate Matter	8	0.20
Sulfur Dioxide	23	0.60
<i>Emergency Flare</i>		
VOCs	42.8	3.32
Carbon Monoxide	113.3	8.78
Nitrogen Oxides as NO <sub>2</sub>	20.8	1.61
Particulate Matter	negl.	negl.
Sulfur Dioxide	4.8	0.38



TABLE 2

Emissions Quantities for Equipment Used During Each Phase of Construction

Emission Point	Emission Rate (lbs/hr)	Total Emissions (tons)
<i>Estimated Total Project Emissions</i>		<i>tons/year</i>
VOCs		26.18
Carbon Monoxide		82.07
Nitrogen Oxides as NO <sub>2</sub>		284.79
Particulate Matter		4.70
Sulfur Dioxide		5.57

- b. *Are there any offsite sources of emissions or odor that may affect your proposal? If so, please describe.*

There are no offsite sources of emissions that will affect the proposed Project.

- c. *Proposed measures to reduce or control emissions or other impacts to air:*

The following BMPs will be employed to reduce or control dust and emissions during construction:

- Vehicles and equipment will comply with applicable federal emissions standards and will be properly maintained to minimize exhaust emissions
- Operational measures such as limiting engine idling time and shutting down equipment when not in use will be implemented
- Watering or other dust-abatement measures will be used as needed to control fugitive dust generated
- Traffic speeds on unpaved roads will be kept to 25 miles per hour (mph) to minimize generation of dust. In this case, watering the unpaved roads might be necessary.
- Carpooling among construction workers will be encouraged to minimize traffic and associated emissions
- Erosion control measures will be implemented to limit disposition of silt to roadways
- Non-road engines, the primary source of emissions, will comply with the federal emission standards for new non-road engines

Because the construction equipment and vehicles will be dispersed across a large, sparsely populated area, no impacts to surrounding residences are anticipated. Project development will take place for a limited duration (less than 1 year). Therefore, total emissions will be relatively minor and environmental impacts will be insignificant.

## Water

### a. Surface

1. *Is there any surface water body on or in the vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, and wetlands)? If yes, describe the type and provide names and into which stream or river it flows.*

The only surface water body is a constructed irrigation pond located approximately 1,400 feet to the west of the Project site. The well and associated pond supplies water to the four crop circles located within Section 24. The pond has no outlet. Water is pumped into the pond from an adjacent groundwater well and pumped out for irrigation. The closest National Wetlands Inventory (NWI) -mapped wetland is a 184-acre lake approximately 1.5 miles south of the proposed well site (Figure 5).

2. *Will the project require any work within 200 feet of the described waters? If yes, please describe and attach available plans.*

No.

3. *Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of the fill material.*

None.

4. *Will the proposal require surface water withdrawals or diversions? Please provide description, purpose, and approximate quantities:*

None is expected at this time.

5. *Does the proposal lie within a 100-year floodplain? If so, please note the location on the site plan.*

No. The well site and adjacent areas are located outside of the 100-year floodplain, based on the USGS Topographic Map, Beverly Quadrangle. The well site is approximately 500 feet higher in elevation than the Columbia River. The Columbia River in this area also has flood control from the Wanapum Dam to the north of the site and the Priest Rapids Dam to the south.

6. *Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.*

No.

### b. Ground

1. *Will ground water be withdrawn, or will water be discharged to ground water? Please give description, purpose, and approximate quantities.*

Water will be needed during the drilling operation, as described below. The total water for the three phases of the Project will be 34.4 million gallons, or 105 acre-feet, with a peak demand of 700 gallons per minute (gpm) and average use rate of 189 gpm. EnCana anticipates using water acquired from either a municipal source or other permitted private

water sources in the vicinity. Depending on which source of water is chosen and the amount of water available, additional storage tanks or ponds may be constructed at the well site to store water during drilling and testing.

During the production testing phase, any groundwater produced from the test well will be contained onsite until water samples have been analyzed by a WDOE-approved lab. A National Pollutant Discharge Elimination System (NPDES) or Wastewater Discharge Permit will be obtained, if necessary, for surface discharge during testing if the water quality is acceptable. If the water quality does not meet discharge requirements, it will be disposed of at an approved site.

2. *Describe waste material that will be discharged into the ground from septic tanks or other sources: (e.g., domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the size and number of the systems, houses to be served; or, the number of animals or humans the systems are expected to serve.*

No waste material will be discharged into the ground during drilling. Water and mud will be used for drilling and completion operations. The drill fluids will be contained and recirculated in steel tanks. The formation fluids and cuttings will be contained onsite pending testing and disposal as described below. No hazardous or toxic chemicals will be placed in the system.

The basalt section (expected to extend to a depth of about 9,000 feet) will be drilled with air, water, and water-based mud. The primary elements in the water-based mud are bentonite and lime. The bentonite and lime will be mixed with water to obtain the desired density, approximately 9.5 pounds per gallon (ppg). The basalt section will be cased off and groundwater will be isolated with cement. Basalt cuttings and drilling fluids will be contained in the lined reserve pit. The basalt cuttings and drill fluids will be assessed and/or tested to determine the proper disposal procedure.

The section below the basalt (from about 9,000 to 14,000 feet) will be drilled with oil-based weighted liquid mud. No identifiable or known sources of potable groundwater exist at this depth. The primary elements in the oil-based mud are diesel, lignosulphonate, and barite. The lignosulphonate and barite will be mixed with water and oil to obtain the desired density of approximately 15.0 ppg. Formation cuttings and fluids generated between 9,000 and 14,000 feet will be contained onsite pending testing and approval for offsite disposal.

The oil-based mud will be displaced from the cased wellbore and replaced with water prior to completion operations.

### **c. Water Runoff (Including Stormwater):**

1. *Describe the source of runoff (including stormwater) and method of collection and disposal. Include quantities, if known. Describe where the water will flow, and if it will flow into other water.*

Stormwater runoff will occur as a result of direct precipitation onto the well site. Stormwater runoff will flow away from the drill pad as dispersed flow toward the perimeter of the site and then to the water storage pond or reserve pit. Stormwater runoff will flow toward the reserve pit and the contingency flare pit in local areas. Any existing road ditches

that drain stormwater runoff will be protected from erosion with rock spill check dams, as needed.

No stormwater runoff is expected to enter directly into surface water bodies or other waters.

2. *Could waste materials enter ground or surface waters? If so, please describe.*

No. The risk of potential discharge of waste materials will be minimized or avoided as described below.

Waste materials are highly unlikely to enter ground or surface waters. Waste materials stored at the staging areas will have secondary containment to prevent entrance into ground or surface waters. The following BMPs will be implemented to minimize or avoid the risk of release of waste materials into ground or surface waters:

- The drilling, completion, and testing equipment will refuel onsite from above ground mobile storage tanks in an area equipped for quick response, including containment and cleanup, of any fuel or oil spills. Other equipment will be fueled offsite.
- Onsite vehicles will be monitored for petroleum leaks. Spills will be cleaned up immediately upon discovery, and reported to the appropriate agency, if necessary.
- Few hazardous materials will be used—primarily small amounts of lubricants and cleaning solutions. Any hazardous waste material generated will be disposed of in a manner specified by local and state regulations or by the manufacturer.
- Cleanup materials will be kept readily available onsite, either at the equipment storage area or on the contractors' trucks.

3. *Proposed Measures to Reduce or Control Surface, Ground, and Runoff Water Impacts, if Any:*

Drilling fluids and drill cuttings will be contained in appropriately sized tanks and lined pits. Drilling fluids will be contained with closed-loop circulation systems. The drilling rig drains will be plugged and drain water captured in the pits.

Stormwater runoff will not be discharged from the site. It will be diverted to the reserve pit, the flare pit, or the water storage pond.

## Plants

a. *Check or circle types of vegetation found on the site:*

*Deciduous tree:* None

*Evergreen tree:* None

*Shrubs:* Big Sagebrush (*Artemisia tridentata*), rigid Sagebrush (*A. rigida*), gray rabbitbrush (*Chrysothamnus nauseosus*) and green rabbitbrush (*C. viscidiflorus*), purple sage (*Salvia dorrii*)

*Grass:* Indian ricegrass (*Achantherum hymenoides*), little quakinggrass (*Briza minor*), (Cheat grass (*Bromus tectorum*), green foxtail (*Setaria viridis*), and medusahead (*Taeniatherum caput-medusa*)

Pasture: None

Crop or grain: Mint with last year's dryland wheat.

Wet soil plants: Prickly sow-thistle (*Sonchus asper*; FACU, FACW, FAC-), yellow bee plant (*Cleome lutea*; UPL, FAC+, FACU, ANF), sheep sorrel (*Rumex acetosella*; FACU+), and curly dock (*R. crispus*; FAC+) (USFWS 1988, 1993).

Water plants: None

Other types of vegetation: Non-native forbs: yellow salsify (*Tragopogon dubius*), perennial pepperweed (*Lepidium latifolium*), clasping pepperweed (*L. perfoliatum*), tumble mustard (*Sisymbrium altissimum*), kochia (*Kochia scoparia*), sheep sorrel (*Rumex acetosella*), curly dock (*R. crispus*), and puncturevine (*Tribulus terrestris*)

Native forbs: Annual bursage (*Ambrosia acanthicarpa*), Absinth wormwood (*Artemisia absinthium*), Carey's balsamroot (*Balsamorhiza careyana*), Cushion daisy (*Erigeron poliospermus*), Shaggy daisy (*E. pumilus*), Prickly sow-thistle (*Sonchus asper*), Menzie's fiddleneck (*Amsinckia menzeisii*), Yellow bee plant (*Cleome lutea*), Silver-leaf phacelia (*Phacelia hastata*), White-stemmed evening primrose (*Oenothera pallida*), and Round-headed desert buckwheat (*Eriogonum sphaerocephalum*).

b. What kind and amount of vegetation will be removed or altered?

The Project area lies within the Columbia Basin ecoregion, which supports sagebrush/wheatgrass steppe and grasslands. However, because of agricultural practices, the native vegetation has been removed or partially displaced. The northeast portion of the Project area consists of agricultural production of alternating mint and dryland wheat (approximately 75 percent of the drill site), while the southwest portion (approximately 25 percent of the drill site) and potential access roads consist of the vegetation listed above. Less than 2.0 acres of native vegetation will be disturbed.

Vegetation removal will result from the construction associated with the widening of the existing access road and approximate 400-foot by 800-foot drill site. Temporary vegetation removal will result from widening the existing roads. Approximately 15 acres of impacts to vegetation will occur as part of the proposed Project.

c. List threatened or endangered species known to be on or near the site.

Attachment A provides a complete list of WDNR Washington Natural Heritage Program (WNHP) rare plants located within Grant County. According to the WNH, no rare plant species have been confirmed to occur within the Project site. Based on a review of federal- and state-listed plants by the U.S. Fish and Wildlife Service (USFWS), one species listed as threatened under federal regulations, Ute ladies'-tresses (*Spiranthes diluvialis*), and one species listed as a candidate for listing, Northern wormwood (*Artemisia campestris* ssp. *borealis* var. *wormskoldii*), are known to occur within Grant County, although none were identified on the Project site during rare plant surveys conducted in May and June of 2006.

- d. *Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:*

The following measures will be implemented to preserve or enhance vegetation:

- Disturbed areas will be revegetated when drilling and completion/testing activities are concluded with an appropriate seed mix consisting of native shrubs, forbs, grasses, and/or agricultural crops developed in consultation with the Washington Department of Fish and Wildlife (WDFW) and the landowner.
- Compacted surface soil will be scarified.
- The previously removed and stockpiled topsoil will be replaced per the surface owner's direction.

## Animals

There are no permanent impacts to wildlife. The primary impacts to these species associated with the proposed Project will be temporary displacement as a result of vehicle traffic and associated human activity. After the Project activities are completed and the Project site is restored, it is expected that wildlife will return.

- a. *Circle or check any birds and animals which have been observed on or near the site or are known to be on or near the site:*

**Birds Observed Onsite**– Mourning doves (*Zenaida macroura*)  
 American robin (*Turdus migratorius*)  
 Sparrows (Emberizidae family)

Terrestrial resource surveys were conducted on May 26 and June 28, 2006, to identify potentially critical habitats and threatened or endangered species that may be affected by the proposed Project. Prior to performing the field survey, data requests for listed species and critical and priority habitats identified in the Project area were made to WDFW, USFWS, and WDNR WNHP. Survey results and a discussion of potential impacts to observed listed species are summarized in the following subsections

The primary disturbances to the aforementioned bird species associated with the proposed Project will be vehicle and associated human traffic. While activities onsite may periodically displace the species, it is expected that they will return to the site.

## **Mammal Observed Onsite – Gopher (Family Geomyidae)**

One mammal species, a gopher (Family Geomyidae) was observed in the Project area. Deer (*Odocoileus* sp.) tracks were also found in the Project area. It is expected that both the gopher and deer in the Project area could potentially be disturbed by the Project. These species could potentially be displaced from the Project area as a result of the influx of humans and heavy construction equipment and associated disturbance (note that in this agricultural area, seasonal disturbance by the use of both light and heavy equipment has been common during times of planting and cultivation). Individuals of these species will likely seek more remote areas with fewer disturbances. Disturbance

and displacement will be temporary in nature. Because of the extent of suitable habitat in the region, temporary loss of habitat as a result of the Project is considered a minor effect and once activities are complete it is expected that they will become habituated to the well site and again occupy surrounding areas.

## **Special Status Species**

### **Potential Impacts to Listed Species**

The field investigations did not confirm the presence of any state-listed species at the Project site. Attachment B provides a compilation of state-listed species that occur within Grant County. No federally listed threatened, endangered, candidate or species of concern were identified within the Project area during the field surveys. Attachment C is a complete list of federally listed species that occur within Grant County.

### **WDFW Priority Habitat and Species of Concern**

Project-specific WDFW Priority Habitats and Species (PHS) maps were requested. The PHS maps show one sighting of a Ferruginous Hawk in 1995 occurring approximately 1 mile south of the Project site. The hawk is listed as both a federal species of concern and state threatened species

WDFW identifies species of concern using "Species Criteria," categorized as follows: (1) state listed and candidate species; (2) vulnerable aggregations; and (3) species of recreational, commercial, and/or tribal importance that are vulnerable.

### **USFWS Threatened, Endangered, and Candidate Species**

The USFWS was also consulted prior to the field survey for potential candidate, threatened, and endangered species that are known to occur within Grant County (see Attachment C). The database results identified five listed animal species (two mammals, two birds, and one fish) and sixteen species of concern (three mammals, five birds, four fish, one reptile, one amphibian, and two invertebrates). No federally listed species were identified within the Project area during the field surveys.

### **Potential Impacts to Federally Listed Species**

Federally listed species (or evidence of them) shown in Attachment C were not observed during field work.

#### *a. Fish*

No fish were confirmed to be located within or adjacent to the Project area.

#### *b. List any threatened or endangered species known to be on or near the site.*

No federal or state-listed species are known to be on or near the site.

#### *c. Is the site part of a migration route? If so, explain.*

None known.

Because there is no water occurring within the Project site or adjacent to access roads, water-dependent birds are not present on the Project site. Some migratory birds may use the man-made irrigation pond; however, the impact of the Brown 7-24 Well would be minimal because construction would occur away from the pond.

d. *Proposed measures to preserve or enhance wildlife, if any:*

- The well site will be restored to a condition at least equal to existing conditions by reestablishing topsoil conditions
- Diesel engines are equipped with exhaust silencers (mufflers)
- As documented in the Plants section, the Project has been designed to avoid placement of Project improvements in native vegetation that provides habitat for wildlife
- Road construction and vehicle use will be minimized where possible to reduce impacts to sensitive habitats such as wetlands

Personnel will be given a briefing on sensitive wildlife of the area, and on required precautions to avoid injuring or destroying wildlife. Personnel will be instructed to be particularly cautious and drive at slower speeds in a period from 1 hour before sunset to 1 hour after sunrise when some wildlife species are the most active.

## Energy and Natural Resources

a. *What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.*

None. If a small facility remains at the end of production testing, a local source of electricity such as onsite generators may be used to meet electricity requirements.

b. *Would your project affect the potential use of solar energy by adjacent properties?*

No.

c. *What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts:*

None. If successful, further development of this Project will provide a source of natural gas.

## Environmental Health

a. *Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal?*

Potential hazards include natural gas encountered while drilling, fire, blowout, water flow, delivery of diesel for rig operation, and personnel safety around the drilling, completion, and testing equipment. These risks are controlled by providing adequate pressure control equipment on the drill rig, regular equipment testing and inspection, adherence to WDNR regulations, and following standard industry drilling practice.

b. *Describe special emergency services that might be required.*



No special emergency service requirements are expected for this Project; however, local fire protection and emergency medical service will be contacted in the event of an emergent situation.

c. *Proposed measures to reduce or control environmental health hazards, if any:*

Operational procedures including worker safety, equipment maintenance, and drilling methods will be conducted in accordance with applicable government regulations associated with environmental and health hazards.

Properly sized blowout prevention equipment will be employed during drilling, completion, and testing operations as a safety precaution.

The following BMPs will also be employed to reduce or control the potential for environmental health hazards:

- Onsite vehicles will be monitored for petroleum leaks. Spills will be cleaned up immediately upon discovery, and reported to the appropriate agency.
- Hazardous waste material generated will be disposed of in a manner specified by local and state regulations or by the manufacturer.
- Cleanup materials will be kept readily available onsite, either at the equipment storage area or on the contractor's trucks.

## Noise

a. *What types of noise exist in the area which may affect your project (e.g., traffic, equipment, operation, other)?*

None. The area is agricultural or uninhabited range land. Therefore, very little, if any, existing noise occurs in the area.

b. *What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (e.g., traffic, equipment, operation, other)? What hours would any noise come from the site?*

Noise will be generated from drilling equipment up to 24 hours a day for a maximum of 230 days during drilling and well completion operations. Phase III will last another 55 days for operations using the smaller workover rig to complete the well if the test results look promising. The standby generator testing and completion may last an additional 35 days. The afterburners may run for an additional 43 days if further testing is required.

c. *Proposed measures to reduce or control noise impacts:*

The diesel engines used to run the drill will be equipped with exhaust silencers (mufflers). In addition, the noise generated will not exceed regulatory limits. The afterburners and the flare station are relatively quiet and will not require muffler systems.

## Land Use

a. *What is the current use of the site and adjacent properties?*

Historically, the land has been used for farming. Adjacent properties are also used for farming production.

*b. Has the site been used for agriculture? If so, please describe.*

The site was cultivated for mint. Aside from temporary disruption of a limited area of the site, the Project will not preclude the agricultural activities from occurring.

*c. Describe any structures on the site.*

No structures exist on the drill site.

*d. Will any structures be demolished? If so, please describe.*

No structures will be demolished as a result of the Project.

*e. What is the current zoning classification of the site?*

The drill site is zoned Rural Remote.

*f. What is the current comprehensive plan designation of the site?*

The comprehensive plan designation of the proposed Project area is Rural Remote.

*g. What is the current shoreline master program designation of the site?*

Not applicable.

*h. Has any part of the site been classified as an "environmentally sensitive" area? If so, please specify.*

No. The Project site is adjacent to the Crab Creek Wildlife Area but according to a discussion with Wendy Bilodeau on June 30, 2006, at the WDFW Ephrata office, Section 24 is not within the reserve (personal communication, June 30, 2006).

### **Critical Fish Habitat Conservation Areas**

There are no fish-bearing tributaries within or adjacent to the Project area.

### **Critical Wildlife Habitat Conservation Areas**

These areas include a habitat of local importance, and areas with which a primary known federal or state endangered, threatened, or sensitive species has a primary association. WDFW's records for the Project site, located within Section 24, "indicates (the) presence of Priority Habitats and Species is unknown or the area was not mapped."

### **Grant County Critical Areas**

Critical Areas are explained under two categories: Environmentally Sensitive Areas, and Hazardous Areas. Environmentally Sensitive Areas include streams, rivers, lakes, ponds, wetlands, and wildlife habitat. Hazardous areas include flood hazards, geological hazards, steep slopes, erosion hazards, volcanic hazards, and critical aquifer recharge areas. Based on the agricultural nature of the Project area, it is not likely that Critical Areas are located within the project site.

As required by the Washington State Growth Management Act (GMA), there are five Critical Areas that all counties and cities are required to protect, as follows:

## **Jurisdictional Wetlands and Waters**

Found throughout Grant County, wetlands provide numerous valuable functions, including but not limited to providing wildlife and fish habitat, water quality enhancement, flood and erosion control, and aquifer recharge and discharge. There are no state or federal jurisdictional wetlands or waters within the Project area. Therefore, there will be no impacts to wetlands or waters associated with Project activities.

## **Frequently Flooded Areas**

These include streams and rivers and have the potential to pose a risk to public and private property and public health. Regulation of these lands protects people and property from flood hazards and allows natural floodplain functions to continue. The Project area is greater than 500 feet in elevation above the 100-year floodplain and will not affect public and private property or public health.

## **Critical Aquifer Recharge Areas**

Critical Aquifer Recharge Areas (CARAs) perform many important biological and physical functions that benefit the County and its residents, including storing and conveying ground-water. Protection of aquifer recharge areas is necessary to protect valuable groundwater resources. There are no wellhead protection areas or sole source aquifers within the Project area; therefore, there will be no impact on groundwater storage and conveyance.

## **Fish and Wildlife Habitat Conservation Areas**

Habitat areas perform many physical and biological functions that include but are not limited to providing opportunities for food, cover, nesting, breeding, and movements for fish and wildlife; maintaining and promoting diversity of species and habitat; and helping to maintain air and water quality. WDFW's records for the project site, located within Section 24, "indicates (the) presence of Priority Habitats and Species is unknown or the area was not mapped."

## **Geologic Hazards**

Although these areas are primarily located in rural areas of the county, they pose a risk to public and private property and to the natural systems that make up the County's environment. Such areas are susceptible to landslides, erosion, seismic activity, volcanic activity, or mining hazards. Future developments should be directed to more geologically stable areas and away from unsuitable ground. There are no known geologic hazards within the Project area.

## **Floodplain**

The nearest 100-year floodplain or floodway is located over 3 miles west of the proposed well location.

i. *How many people would reside or work in the completed project?*

although the Project includes temporary crew quarters for the exploration project, no one is anticipated to reside or work in the completed Project.

j. *How many people would the completed project displace?*

No people will be displaced by the Project.

k. *Please list proposed measures to avoid or reduce displacement impacts:*

No measures are proposed to reduce displacement impacts because the Project will not create displacements.

l. *List proposed measures to ensure the proposal is compatible with existing and projected land uses and plans.*

In Grant County's Rural Remote zoning district, oil and gas exploration does not require special zoning considerations. The Applicant will seek local permits and approvals.

There are no future land use description requirements for the Project site.

- The area surrounding the well pad will still be able to be used as an agricultural resource.
- Figure 6 is a Grant County land use and zoning map.

## Housing

a. *Approximately how many units would be provided? Indicate whether it's high, middle, or low-income housing.*

No permanent housing structures will be provided on the Project site.

b. *Approximately how many units, if any, would be eliminated? Indicate whether it's high, middle, or low-income housing.*

No housing units will be eliminated.

c. *List proposed measures to reduce or control housing impacts.*

No measures are proposed to control housing impacts because no housing impacts will occur as a result of the Project.

## Aesthetics

a. *What is the tallest height of any proposed structure(s), not including antennas? What is proposed as the principal exterior building materials?*

The drilling rigs are equipped with masts and substructures with a maximum total rig height of 170 feet. Temporary shelters for the site workers will consist of portable structures (trailers) less than 10 feet high.

b. *What views in the immediate vicinity would be altered or obstructed?*

Owing to the relatively flat nature of the site, the drilling equipment will be visible from the surrounding areas.

c. *Proposed measures to reduce or control aesthetic impacts.*

None; visual impacts are temporary and will exist only during the time of drilling and completion and production testing.

## Light and Glare

a. *What type of light or glare will the proposal produce? What time of day would it mainly occur?*

Drill rig lights will be used at night for rig crew safety during the 24-hour-per-day drilling and completion operations (approximately 3 hours per day drilling and completion operations and production testing). The contingency flare will only be used during a rare (and unanticipated) emergency; if used, the flare will be visible at night.

*b. Could light or glare from the finished project be a safety hazard or interfere with views?*

Light or glare from the finished Project will not be a safety hazard or interfere with views.

*c. What existing off-site sources of light or glare may affect your proposal?*

No offsite sources of light or glare may affect the Project.

*d. Proposed measures to reduce or control light and glare impacts.*

None. The well site is located over 2,000 feet from any residential structure. The Applicant proposes use of an incinerator to avoid light and glare impacts associated with continuous flaring, if any.

## Recreation

*a. What designated and informal recreational opportunities are in the immediate vicinity?*

Because the Project site is located on private lands, recreational opportunities are limited to hunting.

*b. Would the project displace any existing recreational uses? If so, please describe.*

No.

*c. Proposed measures to reduce or control impacts on recreation, including recreational opportunities to be provided by the project or applicant, if any?*

Not applicable.

## Historic and Cultural Resources

*a. Are there any places or objects on or near the site which are listed or proposed for national, state, or local preservation registers? If so, please describe.*

Rick Anderson with the Washington Department of Archaeology and Historic Preservation indicated there are no known cultural sites on Section 24, T16N, R23E (personal communication, July 6, 2006). One site was identified by Mr. Anderson and was located over 5,000 feet away in Section 18, T16N, R24E.

*b. Please describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.*

No known landmarks or evidence of historic, archaeological, scientific, or cultural importance exist at the Project site.

*c. Proposed measures to reduce or control impacts, if any:*

Because no known landmarks or evidence of historic, archaeological, scientific, or cultural importance exist at the Project site, there shall be no impacts.

## Transportation

- a. *Identify the public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.*

The streets and highways serving the site are shown on Figure 7. Access to the Project will include Routes 243 and 26 heading south and east from Vantage, Washington.

Transport of major equipment will span approximately 8 to 12 months during Project construction and well installation. As stated above, there will be an onsite peak workforce of about 25 workers for each Project phase. Workers will generate an estimated two daily trips (assuming two trucks per every five workers), half of which will occur during the evening peak hour. (This trip estimate includes trip reductions resulting from carpooling.) In addition to worker traffic, there will be occasional light-duty delivery trucks present (less than one per day).

Construction-related traffic consisting of upwards of 25 vehicles per day will transport deliveries of Project equipment and construction materials (such as concrete). Equipment and water deliveries are anticipated to occur between 8 a.m. and 4:30 p.m. on weekdays.

- b. *Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?*

The proposed Project area is not currently served by public transit. Distance to the nearest public transit stop is approximately 60 miles southwest in Yakima, Washington.

- c. *How many parking spaces would the completed project have?*

Aside from temporary parking onsite for workers, no parking spaces will be constructed.

- d. *Will the proposal require new roads or streets, or improvements to existing roads or streets, not including driveways? If so, please describe and indicate whether it's public or private.*

The proposed Project requires improvements to an existing dirt road. The improvements will include widening to approximately 25 feet and surfacing with gravel.

- e. *Will the project use water, rail, or air transportation? If so, please describe.*

The proposed Project will not use water, rail, or air transportation.

- f. *How many vehicular trips per day would be generated by the completed project? Indicate when peak traffic volumes would occur.*

No vehicle trips are expected after completion of the Project, except for monitoring of the site restoration measures.

- g. *Proposed measures to reduce or control transportation impacts, if any:*

None are required.

## Public Services

- a. *Would the project result in an increased need for public services (e.g., fire protection, police protection, health care, schools, other)? If so, please describe.*

The Project will not result in an increased need for public services, including fire protection.

b. *Proposed measures to reduce or control direct impacts on public services, if any.*

There are no proposed measures to reduce or control direct impacts on public services, because the Project will not result in an increased need for public services.

## Utilities

a. *Circle the utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.*

Utilities are not currently available at the well site.

b. *Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.*

None. Electric service will be provided by onsite generators as needed. Bottled drinking water will be used. A portable toilet will be maintained onsite. Trash will be contained and disposed of offsite at an approved facility.

## Resources

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## Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

Ang E. MATHIAS

Date Submitted:

7/14/2006